Interview with Dr. Joseph P. Lawrence III
Office of Naval Research Director of Transition


Dr. Joseph P. Lawrence

In 2004, Dr. Lawrence was selected as Associate Technical Director – Transitions for the Office of Naval Research with responsibility for more than one third of the Department of the Navy (DON) science and technology (S&T) budget, including the Future Naval Capabilities (FNC) and the Advanced Concept Technology Demonstration (ACTD) Programs.

As part of the 2005 reorganization at ONR, the ATD-T position was renamed as the Director of Transition. Dr. Lawrence is a member of the Senior Executive Service.

Dr. Lawrence discussed the ACTD program and his work with the Office of Naval Research in August.

CHIPS: Since Future Naval Capabilities are aligned to the naval capability pillars — Sea Shield, Sea Strike, Sea Base and FORCEnet, do you also look at FNCs in terms of operating in a joint and coalition arena?

Dr. Lawrence: The requirement that we have for developing and transitioning science and technology first, and foremost, is to serve the Navy and Marine Corps warfighters. In doing that, it clearly is to our advantage to see what other people have done, other services or other nations, and to pick and choose from the best S&T available.

We work very hard to maintain a strong and functionally diverse in-house S&T program, with particular focus on those areas where there is a unique or relatively unique need by the Department of the Navy, but we will adopt any advance, and from any source that we see as offering advantage to our warfighters. The FNC program specifically is charged with addressing closure of warfighter defined capability gaps by the introduction and transition of technology from any source.

In terms of interoperability, it is in the best interest of the Department of the Navy, the fleet and forces for us to look for opportunities for developing systems that work not just with other services within the United States but also with coalition partners. The Chief of Naval Operations' vision of a thousand-ship Navy, for example, explicitly requires an interoperable coalition force.

CHIPS: The Navy and Marine Corps missions have evolved beyond conventional warfare. Did these emerging requirements require a shift in focus for ONR?

Dr. Lawrence: Yes, they did. A good example is that when we first started with the FNC process and the DON governing board for FNCs, the Technology Oversight Group (TOG), met to ratify the initial list of capability gaps that we were to work to, Lt. Gen. Ed Hanlon, then commanding general of the Marine Corps Combat Development Command, said that he thought the capability gap list was well conceived by the OPNAV staff, but that he had Marines fighting that day in Iraq and he didn't see any capability gap addressing urban, asymmetric warfare, nor any other specific requirement for the war on terrorism.

By acclamation, a vote was taken by the TOG to add an urban, asymmetric counterterrorism requirement as the number one priority on the capability gap list that we work against. It has been refined since then to include maritime domain awareness and maritime security issues as well; and it has been broadened from exclusively urban warfare to include riverine operations and other asymmetric littoral operations.

CHIPS: Do you work with the Department of Homeland Security?

Dr. Lawrence: We do not have specific ongoing joint programs right now at the Department level, but we do work closely with them at the component level. As an example, the DON has a maritime security technical advisory group (MSTAG) that includes Coast Guard representatives on the executive panel.

We are working with the Coast Guard to develop a coordinated maritime domain awareness and maritime defense capability, at least, in part, in response to National Security Presidential Directive (NSPD) 41.

As you know, retired Rear Adm. Jay Cohen, who just completed a five-year tour as chief of Naval Research, is the new under secretary for science and technology in the Department of Homeland Security. He is in the process of reorganizing the DHS S&T organization and looks to be establishing an S&T management structure similar to the one he set up at the Office of Naval Research.

My counterpart there as Director of Transition, Dr. Robert Hooks, will be coming here to spend some time with me this afternoon to discuss our transition development process.

My understanding is that his intent is to better understand how we have identified requirements, developed S&T programs, and worked to see them transition as a way of helping DHS understand how to better organize its own R&D efforts.

I will of course work with him to help in any way I can, but will also look to use this meeting as an occasion to identify opportunities for collaborative work. We have such large areas of potential collaborative work that I think we both would be remiss in not forging a strong working relationship.

CHIPS: Can you discuss the ACTD process; it seems complicated.

Dr. Lawrence: Well, the process is complicated, but for some good reasons. The topline intent is to enable the Director of Defense Research and Engineering (DDR&E) staff to foster R&D responses to combatant command/commander (COCOM) needs, but responses that are joint in nature. By joint here, I mean involving either multiple U.S. services or a U.S. service and an allied service. The process is largely driven by the COCOMs and is open to government, industry and, of course, to allies.

Because it is so open, there are many paths for introducing proposed Joint Capability Technology Demonstrations (JCTD) into the system, not all of which will garner service support or service acquisition funding. We have people coming in from industry or from the laboratories and centers within the government who have good ideas and present them to a COCOM to generate support for a prospective JCTD, but they may have no support from a service.

If the idea is really good and is approved as a JCTD, we then have to scramble to figure out how to identify service funds frequently outside of the POM process. In these cases, some already approved, and possibly a higher priority program, suffers by having to pay the bill. To avoid this less than desirable situation, we've been working pretty hard lately to figure out how to mine the FNC program for JCTD proposal ideas.

Developing JCTDs from within an approved FNC will enable us to meet COCOM needs, and gain joint support and involvement in approved Department of the Navy R&D. At the same time, we can start with a DON commitment to provide development and acquisition funding if the JCTD is successful.

Before she left, I talked to Ms. Sue Payton, she is the former deputy under secretary of Defense for advanced systems and concepts; she was nominated April 25, 2006, for assistant secretary of the Air Force for acquisition, research and development. She encouraged us to identify projects that are funded for which we have identified transition customers in the acquisition world, and to look within that list for projects that would do well as a joint program that address COCOM requirements. That's what we have been working to do.

If we are successful, we will identify a need by the COCOMs that we can address with a commitment by at least one service to take it into acquisition and production.

The alternative, failure mode is when we don't have service support for acquisition, and nevertheless, are directed to fund a JCTD. In these cases we spend the R&D money to develop one or two prototypes and may end up with no maintenance tail and no follow-on production to supplement the fielded demonstration units from the JCTD.

CHIPS: I have heard that sometimes problems stem from users predetermining a solution before giving the research centers the opportunity to identify the best one.

Dr. Lawrence: That's something we all have to contend with in the S&T community, where the definition of the requirement is often presented in the form of someone else's solution. This places a burden on the S&T community to talk to the end users to work to better understand what their real requirements are and then to identify to them the available S&T solutions, which may not be what they originally conceived but may better solve their problem. The burden is on us to better understand warfighter requirements.

CHIPS: Who are the members of the FNC integrated process team?

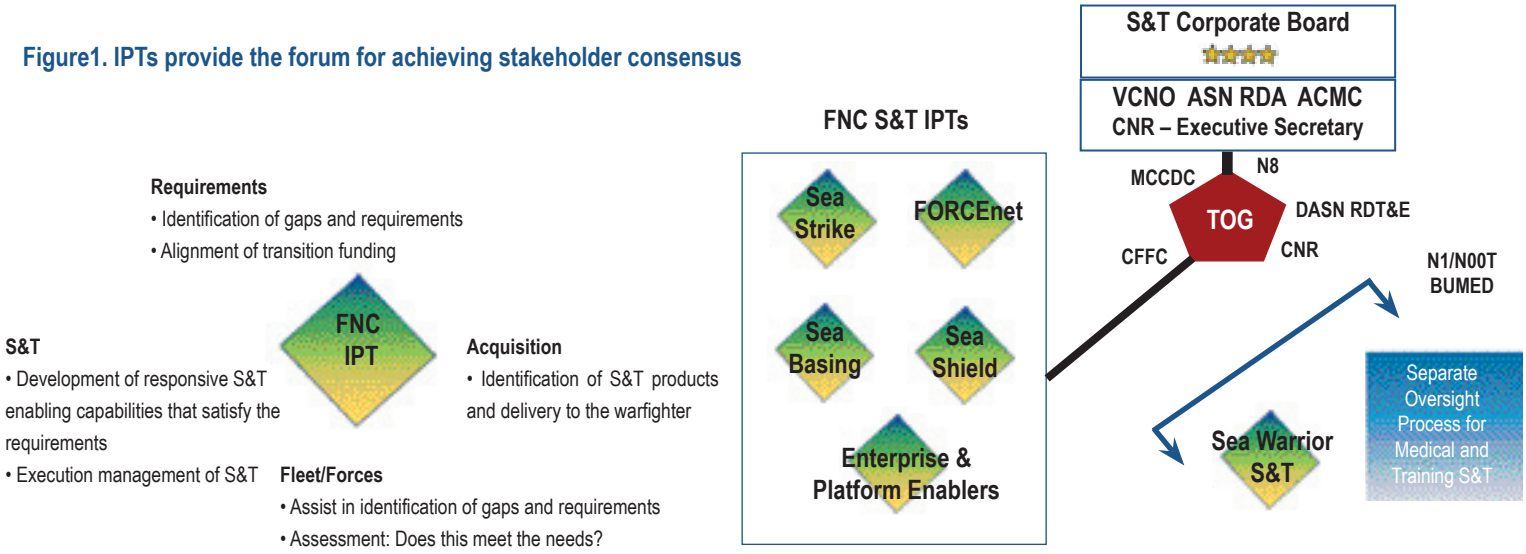
Dr. Lawrence: There is a Technology Oversight Group (TOG) that provides overall governance for the FNC program. Vice Adm. Kevin Cosgriff, deputy commander Fleet Forces Command, is the fleet/forces member. Vice Adm. Lewis Crenshaw, deputy chief of Naval Operations for resources, requirements and assessments-N8, is the OPNAV member.

Commanding General of the Marine Corps Combat Development Command, Lt. Gen. James F. Amos, is the Marine Corps HQ member. Deputy Assistant Secretary of the Navy Research, Development, Test and Evaluation (DASN RDT&E) Dr. Michael McGrath, is the ASN RDA member. The Chief of Naval Research Rear Adm. William Landay, is the S&T member. Underneath the TOG, there are five Sea Power 21 Pillar integrated process teams that have responsibility for monitoring individual FNC products and ensuring their transition to the fleet and forces.

CHIPS: What is their role on that team? (See Figure 1 below.)

Dr. Lawrence: The oversight group works along well-prescribed lines of responsibility. The OPNAV staff and Headquarters Marine Corps do the analysis that leads to the definition of require-

Figure1. IPTs provide the forum for achieving stakeholder consensus



ments. They provide us with capability gaps. These come out of the Sea Power 21 analysis process.

They scrub through a larger set of capability gaps to identify which of the gaps are S&T related as opposed to funding or operations-related items. They give us a subset of the Sea Power 21 gaps, that is, the ones that require S&T input.

ONR defines product and program proposals that address closing those gaps — after analysis and discussion with the warfighter and the OPNAV and Marine Corps Headquarters staff. The Sea Power 21 Pillars IPTs evaluate our proposals to determine which ones have the highest priority impact on the gaps they have defined. Through final vote by the TOG, they give us a prioritized list of those proposals, and we fund as many as we have available funding to support.

The process gives the Headquarters Marine Corps and OPNAV staff members of the TOG responsibility for defining the requirements and for prioritizing S&T. ONR has responsibility to identify the available S&T. The fleet and forces representatives and the acquisition representatives have interplay in the process.

The acquisition community provides advice that 'if you fund this S&T and expect to get into production, this is what we see as the issues' and ultimately what the cost is for the acquisition. The fleet and forces representatives have to weigh in and indicate what they see as a priority for operational use.

The process works well. The senior representatives are well engaged in evaluation of the work that we are doing and in defining requirements for us.

CHIPS: Once an ACTD has transitioned into a program of record and is in production, does ONR still have a role to play?

Dr. Lawrence: From an ACTD, or now JCTD standpoint and for FNC projects, our role in a formal sense ends with the completion of the S&T content and delivery to an acquisition customer. However, Rear Adm. Landay has indicated that he does not define success for S&T to be handing over a product to the next higher order of funding, which is the acquisition community.

Rather, the measure of success that he wants us to use is to achieve ultimate delivery of the S&T product to the fleet and forces. So, while we do not have a formal role in the acquisition process, we do need to maintain contact to provide continuity in acquisition and to track the process as the S&T product transitions through acquisition and on into production and delivery.

What we newly have initiated then is a process for tracking the S&T as it progresses through acquisition and into operational use. Rear Adm. Landay has introduced this as a metric that he wants to track. It is a new metric, but it is a critical one, and a good measure of true success for S&T.

CHIPS: Can you talk about any recent success stories in transitioning capabilities to the Navy or Marine Corps?

Dr. Lawrence: Yes indeed, with pleasure. There have been a large number of successful transitions within the FNC program, in particular, we have started completing the products first initiated in fiscal year 2002. I'd like to highlight just a few of them.

Within the past year we tested and delivered to the Navy and Air Force a JDAM assault breaching system combining existing JDAMs with an FNC developed lethality-based mission planner to achieve a significantly improved capability by the Marines to breach obstacles and surface mines in surf and beach zones.

We developed and delivered a highly sensitive, low probability of intercept (LPI) electronic warfare receiver that has transitioned to classified Army and Air Force programs, has been used by EP-3s (electronic reconnaissance aircraft) in Iraq in search of special signals, and is being procured in quantity for installation on board most Navy submarines.

We developed and delivered software to the Program Executive Office C4I PMW-159 that resulted in a five-fold increase in Link 16 instantaneous capacity by implementation of new dynamic network management and time slot allocation protocols.

For Littoral Combat Ship (LCS) use, we developed an airborne communications package for Fire Scout. We developed and delivered a three-camera shipboard distributed aperture sensor to perform panoramic infrared search, anti-ship cruise missile (ASCM) detection and tracking, and asymmetric threat surveillance for use on LPD 17-class amphibious transport dock ships and Arleigh Burke-class (DDG 51), and cruiser (CG) class ships.

We developed also a QuikClot advanced clotting sponge as a next generation life saving agent for battlefield control of moderate to severe bleeding. This product has recently been in final review for use in the Individual First Aid Kit (IFAK) carried by every Marine.

From a related ONR program, the Rapid Technology Transition (RTT) program, I should also highlight a recent titanium nitride T-58 compressor blade erosion resistant coating that is now being deployed to achieve an estimated $56 million estimated life cycle cost savings and a two-fold engine lifetime improvement in desert environs.

We at ONR and within the overall Naval Research Enterprise are rightly proud of the successes we've been able to achieve so far, but we do recognize that we need now to work even harder to ensure that the warfighters in our fleet and forces continue to enjoy the technological superiority that we all have come to expect and rely on.

For more information about the Office of Transition go to http://www.onr.navy.mil/sci_tech/3t/.

Dr. Lawrence's biography is available at http://www.onr.navy.mil/about/docs/lawrence_joseph_2006.pdf.

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